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Surgery of the Hypophyseal Region

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Introduction

The present report is concerned with the surgical aspect of the tumors of the hypophysis and its neighborhood, i.e., the third ventricle and the mesial part of the lower surfaces of temporal lobes.

1) **Normal histology of the hypophysis.**

Following the method of Rasmussen (1929), Inamoto made a careful study of cell types of the anterior lobe of the adult human hypophysis.

The result was almost the same as that of Rasmussen, namely;

Chromophobe cells 49.5 %, eosinophil cells 33.6 % and basophil cells 15.0 % (Tab. 1).

Erdheim, Kraus.	eosinophil cells > basophil cells > chromophobe cells		
Berblinger, Hoeppli.	eosinophil cells > chromophobe cells > basophil cells		
	chomophobe (undifferentiated γ) cells	eosinophil (α) cells	basophil (β) cells
Rasmussen	52.2% (34—66%)	36.8% (23—60%)	10.9% (4—27%)
Inamoto	49.5% (36.2—68.1%)	33.6% (12.3—47.6%)	15.0% (2.9—25.5%)

Table 1. Proportion of cell types of the anterior lobe of normal human hypophysis.

2) **Study of cell types of the hypophysis by means of tissue culture.**

Small pieces of anterior lobes of hypophyses of normal rabbits were subjected to tissue culture in hanging drops (Matsuda). Rapidly growing cells were for the most part chromophobe cells, while chromophil cells proliferated very poorly (Fig. 1).

An attempt was then made to cultivate in vitro fresh pieces of chromophobe adenoma obtained at operation (Fig. 2). Although the potentiality to grow was not significant, it was our impression that in solid adenomas proliferation was more extensive than in cystic.

Diagnostic problems

1) **Endocrinological:**

It should always be kept in mind that in cases of hypophyseal and neighboring tumors the

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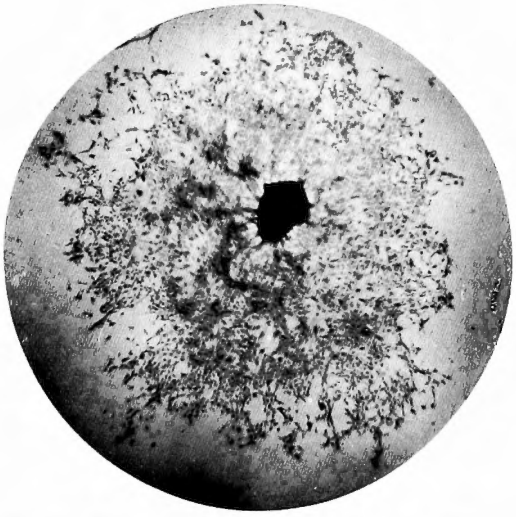

Fig. 1 Cultivation in vitro of anterior lobe of the hypophysis of normal rabbit. A black mass in the center represents the mother tissue. Unstained preparation ×16.

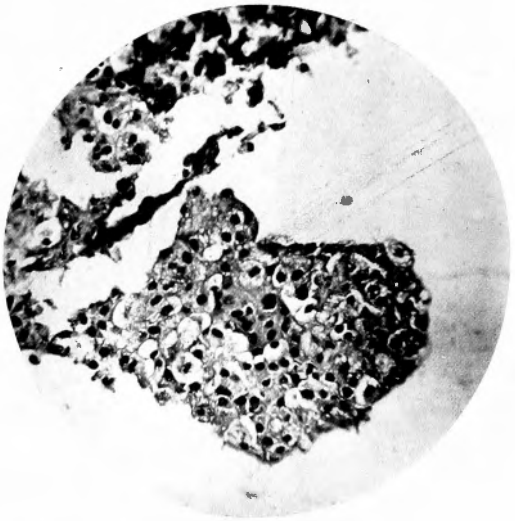

Fig. 2 Cultivation in vitro of human chromophobe adenoma of hypophysis. Hematoxylin and eosin stain. Upper left: mother tissue. ×320.

adiposogenital dystrophy is not necessarily typical, the adiposity being not infrequently absent, while on the other hand, in cerebellar tumors accompanied by hydrocephalus the typical adiposogenital dystrophy is occasionally seen.

2) **Symptoms arising from neighboring structures.**

In intrasellar tumors, because of its midline position, it is quite unusual that cranial nerves other than the optic are involved. If two or more anterior cranial nerves are simultaniously paralyzed on one side, the lesion is as a rule located parasellarly (Fig. 3). All of my nine cases of parasellar tumor showed more or less unilateral multiple involvement of these nerves.

In one case Horner's syndrom was found on the side of the tumor, presumably due to the compression of the sympathetics of the wall of the intracranial carotid artery.

In two cases contralateral hemiparesis was seen as a result

Fig. 3 Topography of the parasellar region.

of the involvement of the cerebral peduncle (Fig. 4).

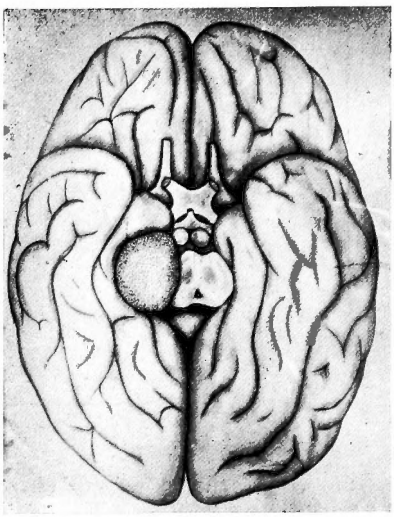

Fig. 4 Parasellar tumor pressing upon the cerebral peduncle, causing hemiplegia on the contralateral side.

3) Disturbances from the hypothalamus.

While well known signs of hypothalamic deficiency, diabetes insipidus and adiposogenital dystrophy, are of diagnostic value, more important for surgery are the regulatory disturbances of blood circulation, respiration, body temperature and sleep or consciousness. If the hypothalamus is injured during operation, the patient becomes comatose at once, respiration rapid and shallow, temperature alarmingly high and death ensues within twenty four to forty eight hours. Three such cases were experienced.

4) Water metabolism in pituitary tumors.

It may be expected that in pituitary patients diabetes insipidus, at least in latent form if not clinically manifest at present, could be demonstrated in some experimental way. For this purpose, Kikawa in our laboratory tested the dilution and concentration of the urine in pituitary patients. After giving 1,000 cc of water early in the morning, he followed the changes of volume and specific gravity of the urine for twenty four hours (Fig. 5, 6, 7 and Tab. 2).

The result was contrary to our expectation. Of the 8 cases of pituitary chromophobe adenoma, only one showed a curve suggesting diabetes insipidus, i. e. dilution being normal, while concentration is markedly disturbed. In 5 cases, the disturbance in dilution was much more striking than that of concentration. This is the type, in which water retention occurs in tissues, opposite to that in diabetes insipidus.

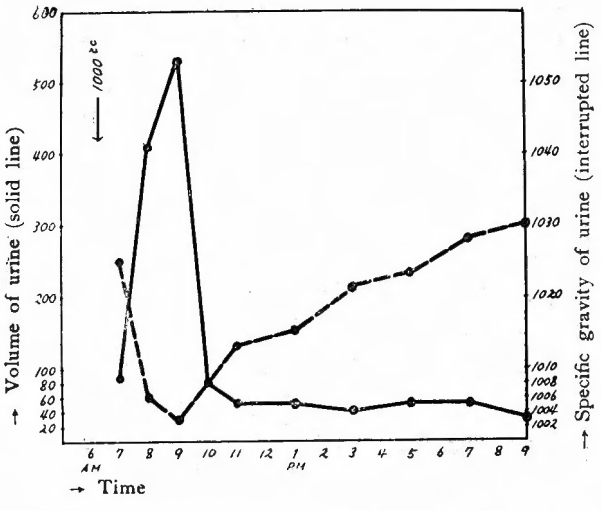

Fig. 5 Normal curve in the dilution and concentration test of urine.

5) Influence of pituitary tumors upon the endocrine function of the posterior lobe.

The oxytocic effects of the cerebrospinal fluid were determined by Mori in cases of various brain tumors.

The frequency in which the positive reaction was shown, is in decreasing order as follows; i) Tumors of the posterior fossa, ii) pituitary tumors, and iii) tumors of the cerebral hemispheres (Tab. 3).

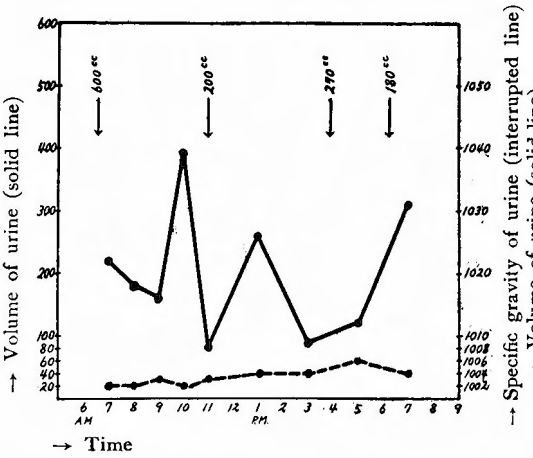

Fig. 6 Urine curve in a case of diabetes insipidus.

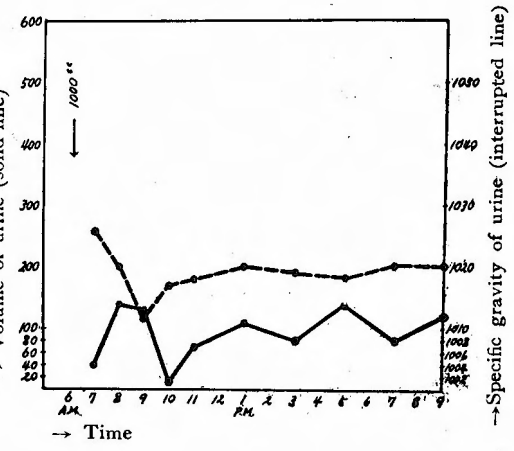

Fig. 7 Urine curve in a case of pituitary chromophobe adenoma.

	Pituitary tumors	Tumors of the posterior fossa	Cerebral tumors
Both dilution and concentration, especially the former disturbed	5	1	0
Concentration disturbed	1	2	0
Both dilution and concentration normal	2	4	4
Total	8	7	4

Table 2. Result of the dilution and concentration test of urine in brain tumors.

	Cases	+	±	−	Percentage of positive cases
Epilepsy	21	4	1	16	23.8
Cerebral tumors	11	1	0	10	9.0
Pituitary tumors	10	2	1	7	30.0
Tumors of the posterior fossa	12	5	1	6	50.0
Arachnoiditis of chiasmatic cistern	9	4	1	4	55.5

Table 3. Oxytocic effects of cerebrospinal fluid in various intracranial lesions.

6) Basal metabolic rates.

The ordinary estimation of the basal metabolic rate has little significance for the regional diagnosis of brain tumors. If, however, an anterior lobe extract is given intravenously in a dose of 500 rat units, the basal metabolic rates in patients with pituitary lesions except for acromegaly show a tendency to decrease in one or two hours (Tab. 4), while in patients with lesions in other locations the rates remain the same or somewhat increase (Yamada, Tab. 5).

7) Hematological studies.

In my series of 10 cases of pituitary adenoma, definite leucopenia associated with relative lymphocytosis was found (Tab. 6, 7 and 8).

		Rate before injection	after 1 hour		after 2 hours	
			actual rate	change in rate	actual rate	change in rate
1	Cerebral tumor	−8.4	−2.7	+5.7		
2	Cerebral tuberculoma	−8.1	−5.3	+2.8		
3	Acoustic tumor	+9.5	+10.2	+0.7		
4	Postencephalitic epilepsy	−16.0			−10.6	+5.4
5	,,	+6.6	+6.8	+0.2		
6	Epilepsy	+3.6			−2.4	+1.2
7	,,	−8.4	−7.2	+1.2	−7.6	+0.8
8	,,	+1.4	+4.3	+2.9	+1.9	+0.5
9	Headaches	+13.2	−13.2	0.0		
10	Struma parenchymatosa	+34.3			+34.8	+0.5
11	Acromegaly	−7.0	−3.9	+3.1		
12	,,	+36.6	increased			

Table 4. Change in the basal metabolic rate after injecting prehormone (anterior lobe extract) in cases with no lesion in the pituitary region.

		Rate before injection	after 1 hour		after 2 hours	
			actual rate	change in rate	actual rate	change in rate
1	Chromophobe adenoma	−3.5	−9.4	−5.9		
2	,,	−3.4	−9.5	−6.1	−15.3	−11.9
3	,,	+5.3	+1.5	−3.8	+3.6	−1.9
4	,,	−12.3	−13.0	−0.7	−12.5	−0.2
5	Craniopharyngioma	−0.3			−6.6	−6.9
6	,,	−1.0	−17.5	−16.5		
7	Arachnoiditis of chiasmatic cistern	−3.8	−10.1	−6.3	−13.2	−9.4
8	,,	+13.3			+12.4	−0.9
9	,,	+1.6	−7.1	−8.7	−4.4	−6.0
10	Traumatic softening of the base of the frontal lobe	+0.7			−4.2	−4.9
11	Contusion in the region of optic canal	+2.1			−0.4	−1.7

Table 5. Change in the basal metabolic rate after injecting prehormone in cases with lesion in the pituitary region.

Case	Erythrocytes (million)	Leucocytes	Lymphocytes (%)
1	4.94	7,400	35
2	3.78	6,800	54
3	4.62	5,600	34
4	3.51	5,600	45
5	6.14	5,500	48
6	3.98	5,400	31
7	4.61	5,300	34
8	4.19	5,200	54
9	4.80	5,100	28
10	4.72	4,400	44
11	5.82	4,200	41

Table 6 Blood cell count in pituitary tumors.

Case	Erythrocytes (million)	Leucocytes	Lymphocytes (%)
1	3.81	11,400	31
2	4.98	10,400	33
3	4.49	8,600	14
4	5.02	8,000	42
5	4.18	7,800	19
6	4.13	7,800	28
7	4.66	7,800	33
8	4.40	7,600	55
9	3.75	7,600	40
10	5.67	7,390	36
11	3.92	5,800	24

Table 7. Blood cell count in cerebral tumors.

8) Blood sugar studies.

30 gm of glucose was given by mouth and the blood sugar level was determined for 4 hours.

In spite of the fact that the types of change of the blood sugar level were not regular so as to characterize the location of the lesion in the brain specifically, it was found by Matsuda, taking all unusual types together, that abnormal curves were seen most frequently in tumors of the posteror fossa and far less in pituitary tumors (Fig. 8 and Tab. 9).

9) Papilledema.

Pepilledema is not infrequently found in suprasellar tumors, though quite rarely in pituitary adenomas. It is to be noted that even in cases showing papilledema the visual fields tend to show some hemianopic defects characteristic of pituitary tumors (Tab. 10).

The diagnostic formula may therefore be justified, that a tumor of the hypophysis or its neighborhood is not probable when papilledema without any hemianopic field defect is found.

Case	Erythrocytes (million)	Leucocytes	Lymphocytes (%)
1	4.57	11,900	23
2	4.24	11,500	16
3	3.98	10,400	16
4	4.38	9,800	28
5	3.67	8,960	23
6	4.62	8,200	30
7	3.62	7,900	56
8	5.46	7,800	31
9	4.52	7,800	22
10	4.48	7,600	47
11	4.21	7,600	11
12	3.52	7,600	22
13	3.38	7,520	53
14	4.51	5,900	43

Table 8. Blood cell count in tumors of the posterior cranial fossa.

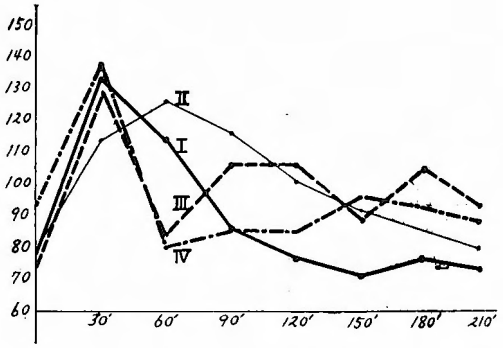

Fig. 8 Various types of blood sugar curves. I: normal, II, III and IV: more or less deviated from normal.

Location of tumors	Deviated from normal	Slightly deviated	Normal	Total	
Pituitary tumors excluding acromegaly	0	3	4	7	
Cerebral tumors	1	1	3	5	
Tumors of the posterior fossa	5	0	2	7	11
Mesencephalic tumors	4	0	0	4	

Table 9. Blood sugar curves in brain tumors.

X-ray diagnosis

10) Ordinary X-ray pictures of the skull.

In some cases of hydrocephalus due to tumors in the posterior cranial fossa, the sella in profile undergoes similar changes as in intrasellar tumors (Fig. 9). The differentiation is not difficult, if, in hydrocephalus, as is usually the case, roentgenological signs of increased intracranial

			Visual field			Total	
Papilledema	+	21	Normal		2	4	
			Concentric contraction		2		
			Temporal hemianopia	Bilateral	8	12	17
				Unilateral	4		
			Homonymous and other field defects		5	5	
	−	32	Normal		4	7	
			Concentric contraction		3		
			Temporal hemianopia	Bilateral	11	19	24
				Unilateral	8		
			Homonymous and other field defects		5	5	
			Totally blind		1	1	

Table 10. Visual field defects in craniophayrngiomas showing papilledema.

pressure (for instance deepened convolutional markings) are present, which are quite rare in intrasellar tumors.

In parasellar tumors an ordinary P-A picture occasionally reveals the destruction of sphenoidal ridge, superior orbital fissure, tip of the petrous bone, etc. (Fig. 10).

For accurate diagnosis the axial projection is recommended, by which not only the seat of the tumor but also its extention can be demonstrated (Ishino).

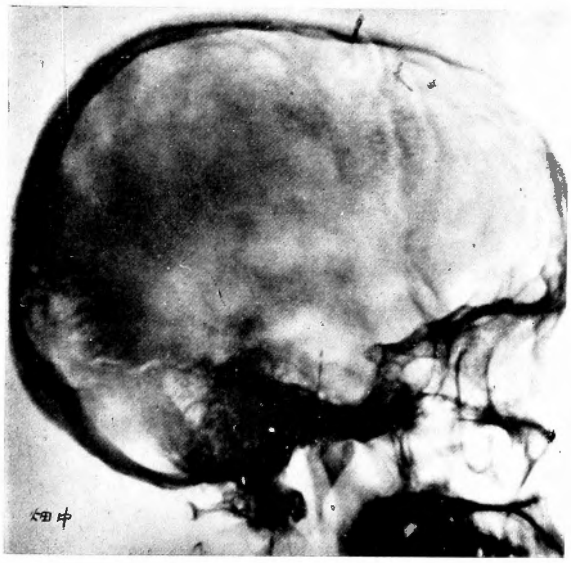

Fig. 9 Ballooned out sella in a case of hemangioma of the fourth ventricle. Note the strikingly deepened convolutional markings of the skull.

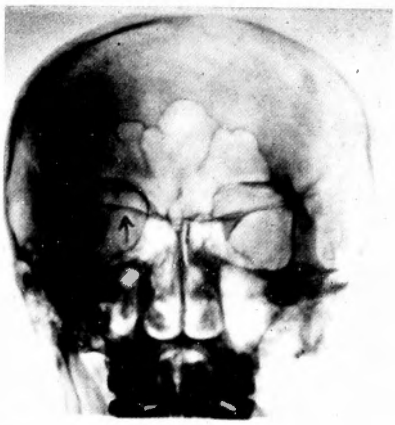

Fig. 10 Destruction of the right sphenoidal ridge in a case of parasellar fibroma (arrow)

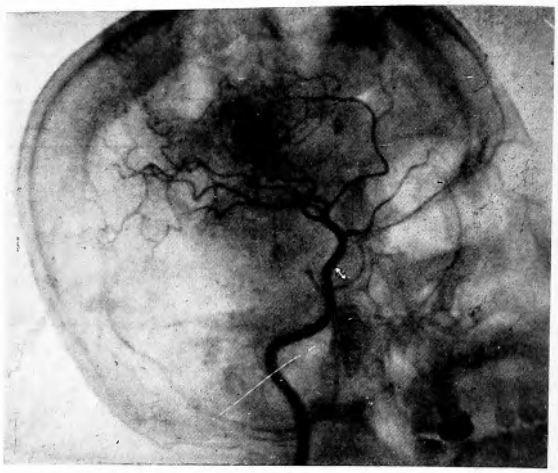

Fig. 11 Pocket formation between the floor of sella and the intracranial portion of the carotid artery in a case of pituitary chromophobe adenoma.

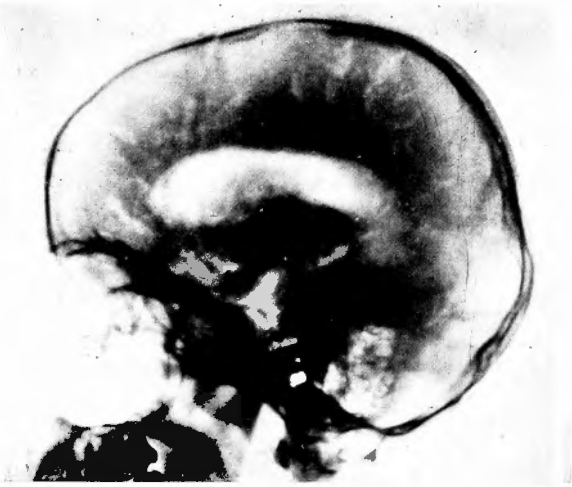

Fig. 12 Chiasmatic and interpeduncular cisterns shown in a pneumoencephalogram.

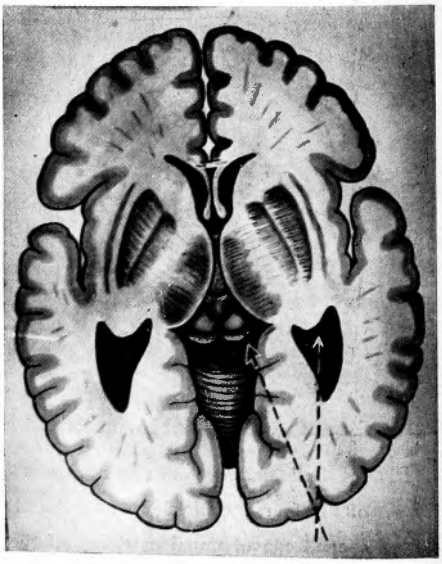

Fig. 13 Diagram to show the way in which ambient cistern instead of posterior horn of lateral ventricle is punctured.

11) Cerebral arteriography.

As a characteristic sign of intrasellar tumors, Dr. Shimizu of Tokyo noticed the unusual pocket formation between the intracranial carotid and the floor of the sella. Our cases ascertained his findings (Fig. 11).

12) Visualization of basilar cisterns.

Although in the usual pneumoencephalograms we can see the chiasmatic and interpeduncular cisterns filled with air (Fig. 12), they are not always so clear that this method can be used for the diagnosis of basilarly situated tumors.

Some time ago, I filled the basilar cisterns with iodized oil after erroneously puncturing the ambient cistern (Fig. 13). In two normal cases and in one with pituitary adenoma, the results were quite unsatisfactory (Fig. 14 and 15), because the distribution of the oil was too irregular to be able to interpret any change.

Fig. 14 Basilar cisterns filled with iodized oil in a normal patient.

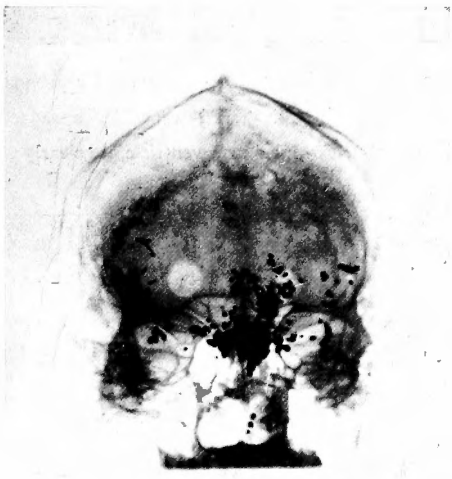

Fig. 15 The P-A picture of the same patient.

13) Ventriculography by means of iodized oil.

4 cc of moljodol (lipiodol made in Japan) is introduced directly into one of the lateral ventricles of the brain and under fluoroscopic control, moving the head in various positions, the oil is brought to any desired part of the ventricular system. If any change in the configuration of the ventricles or some disturbance in the passage of the oil is detected, a series of X-ray pictures are taken (Asano).

The advantage of this method is in obtaining a very clear picture of the third ventricle and the temporal horns, of which the pneumoventriculography gives not infrequently an incomplete information (Fig. 16 and 17).

i) In pituitary adenomas the floor of the third ventricle is elevated and the characteristic

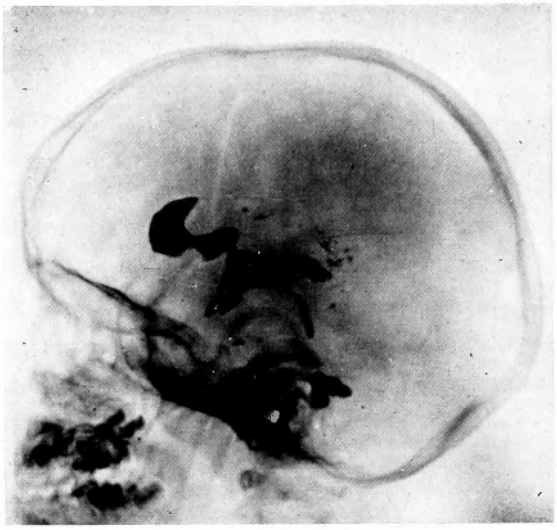

Fig. 16 Normal ventriculogram by means of iodized oil. Third ventricle, aqueduct of Sylvius and fourth ventricle are clearly seen.

Fig. 17 The P-A view of the same patient as Fig. 16.

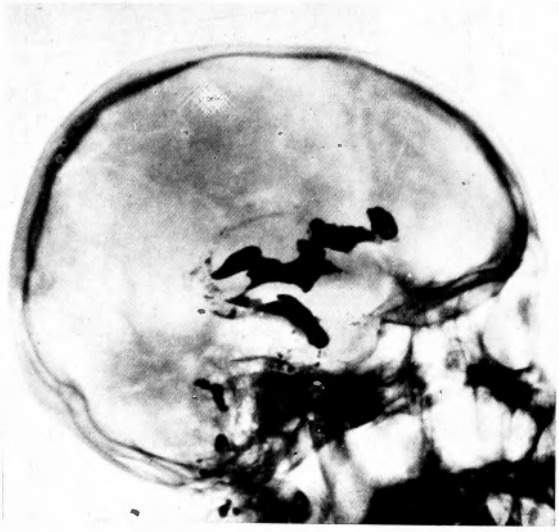

Fig. 18 Characteristic deformation of the third ventricle in a case of chromophobe adenoma. The floor of the third ventricle is elevated and recessus opticus and recessus infundibuli have lost their normal configuration.

forked projections of the normal supraoptic and infundibular recesses disappear (Fig. 18, 19 and 20).

ii) In antesellar tumors the recesses are pushed back and upward, without significant alteration of the configuration (Fig. 21 and 22).

iii) Characteristic of parasellar tumors are the upward dislocation and the filling defects in the tip of the temporal horn on the sideof the tumor (Fig. 23).

14) **Arachnoiditis of the chiasmatic cistern to be differentiated from pituitary tumors.**

It is my impression that chronic retrobulbar neuritis, which is not effectively helped by ophthalmologists, should rather be treated by neurosurgeons, because a simple exploration of the chiasmal region usually improves the vision.

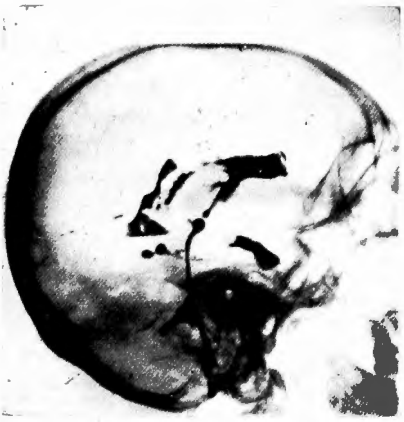

Fig. 19 Craniopharyngioma. The third ventricle has been transformed into a narrow channel.

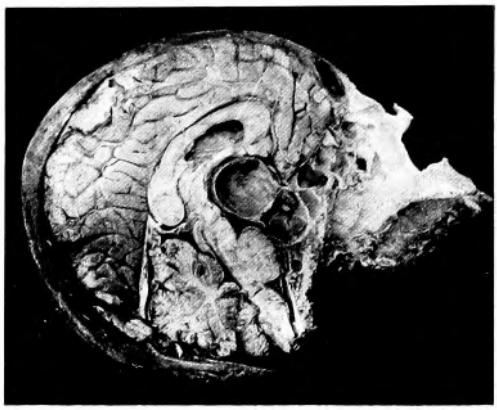

Fig. 20 The same case as seen in the autopsy specimen.

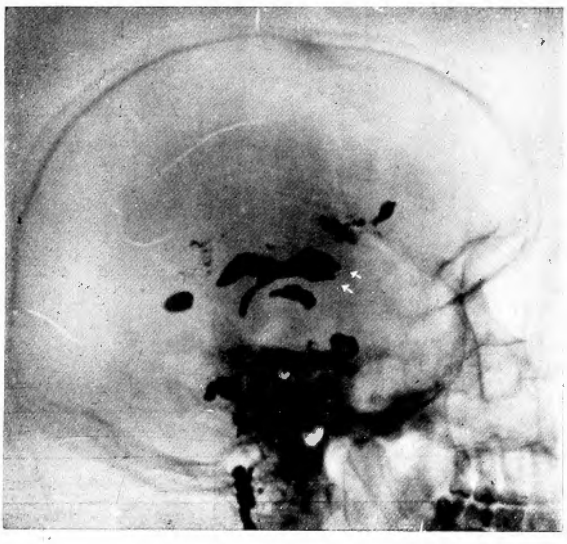

Fig. 21 Antesellar tumor. The third ventricle is dislocated up- and backward.

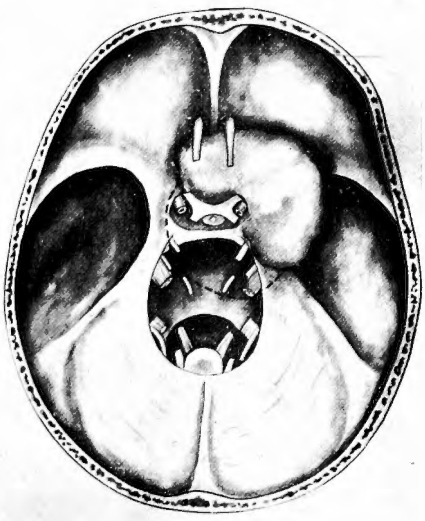

Fig. 22 The same case at exploration (half schematic).

From the point of symptomatology and effectiveness of the operation, it does not make any difference, whether the adhesions and the thickening of the arachnoid of the cistern are present or not.

Surgical Treatment

1) **Indication——visual disturbances.**

Although surgical attack on pituitary tumors, as is generally acknowledged, is indicated,

when the tumor has become large enough to push the optic chiasm upward and to cause visual disturbances, the remarkable improvement is not to be expected after operation in a late stage, when the vision of both eyes is severely impaired. To my regret, all of our patients were referred for operation too late for satisfactory visual improvement (Tab. 11).

2) **Indication——headaches.**

In the presence of severe headaches, even when there is no remarkable visual disturbance, I believe the pituitary tumors should be operated on, in order to release the tension of the sellar diaphragm (Tab. 12).

Fig. 23 Parasellar tumor. Note the elevation of temporal horn on the side of the tumor.

Disturbance of visual acuity	Acromegaly	Chromophobe adenoma	Suprasellar tumor
Within normal limits	18	0	2
Slightly disturbed on both sides (0.6 or more)	0	1	0
Remarkably disturbed on one side (0.5 or less) and slightly disturbed on the other.	10	5	1
Remarkably disturbed on both sides.	10	21	19
Total	38	28	22

Table 11. Disturbances of visual acuity in pituitary tumors reported in Japan (including our 14 cases).

3) **Experimental evidence as to the possibility of removing chromophobe adenomas without increasing hypopituitarism.**

Visual disturbance		Headaches	
+	19	+ −	17 2
−	14	+ −	11 3
Total	33		

Table 12. Occurrence of headaches in acromegaly with or without visual disturbance.

In order to determine if there are normal pituitary hormones in a chromophobe adenoma, small pieces of fresh adenomatous tissue obtained at operation were transplanted in adult female rats.

In a series of experiments made on five occasions, there were no hormonal responses in any way, while in control animals, in which similar pieces of the anterior lobe of a normal female rabbit were transplanted, growth promoting, gonadotropic and interrenotropic effects were remarkable (Fig. 24). Thus the conclusion may be justifiable, that a chromophobe adenoma is no longer an endocrinologically functioning gland and that the subtotal removal of it does not

necessarily cause any additional hypopituitarism.

Operative techniques

4) Disadvantages of the transsphenoidal approach.

In addition to the possible danger of meningitis, I wish to point out another disadvantage of the transsphenoidal approach. As the prime object of the operation for pituitary adenomas is to save vision and relieve headaches, the removal of the suprasellar portion of the adenoma should be the essential part of the operation ; this can not be done by this approach without difficulty and danger.

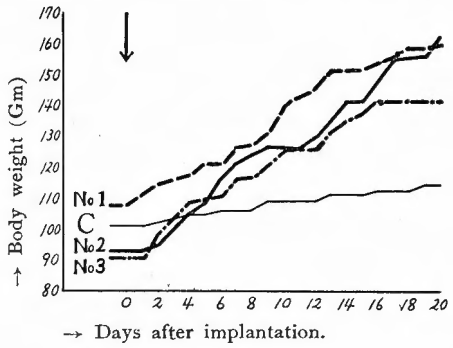

Fig. 24 Increase in body weight of adult female rats after implantation of normal anterior hypophyses (55—65 mg) of female rabbits. C: control animal without implantation.

5) Transfrontal approach.

Hypophysis can be reached surgically by an approach either under the frontal (transfrontal) or the temporal (transtemporal) lobe. While in both the distance to the hypophysis is almost the same, surgical manipulations can be done more safely in the former, over the flat anterior cranial fossa, than in the latter, over the concave middle cranial fossa, since the complicated curved approach of the latter is apt to cause more traumatization of the brain (Fig. 25). This is the reason why we prefer the transfrontal approach.

6) Transfrontal craniotomy.

I prefer the concealed incision of Dandy, the upper line of which, in my experience, is better elongated foreward over the hairline for 1.5—2 cm (Fig. 26).

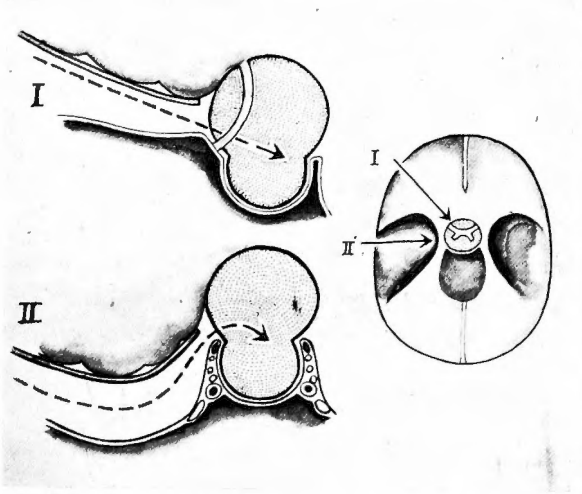

Fig. 25 Transfrontal (I) and transtemporal (II) approach to hypophysis.

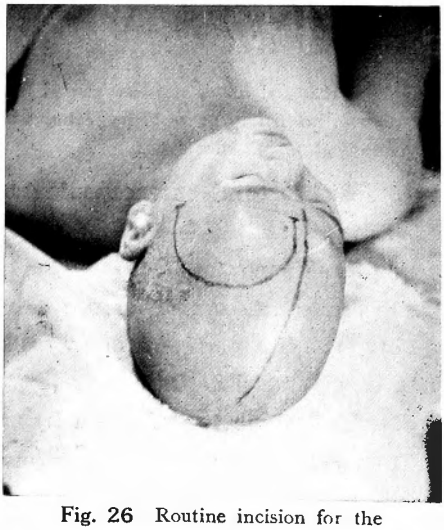

Fig. 26 Routine incision for the transfrontal approach.

An intradural attack is occasionally objected due to the possible sequel of traumatic epilepsy. However, it is my opinion that, if as much of the cerebrospinal fluid as possible is removed by suction and the brain becomes shrunken, we can obtain ample room at the base of the brain to reach the hypophysis without damaging the frontal lobe and the possibility of traumatic epilepsy is reduced to a minimum. If the shrinkage of the brain is not sufficient, the frontal lobe should be resected.

7) **Normal hypophysis as seen in the operative field.**

Normal hypophysis is as a rule concealed under the sellar diaphragm, except for its infundibular stalk. On some occasions, however, a portion of the hypophysis as large as a pea is visible above the diaphragm (Fig. 27 and 28). This is nothing more than an anatomical variation of the normal hypophysis.

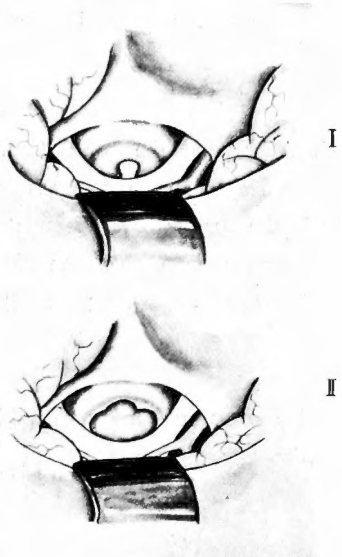

Fig. 27 Normal hypophysis as seen in the operative field. I: ordinary type, II: unusual supprasellar type.

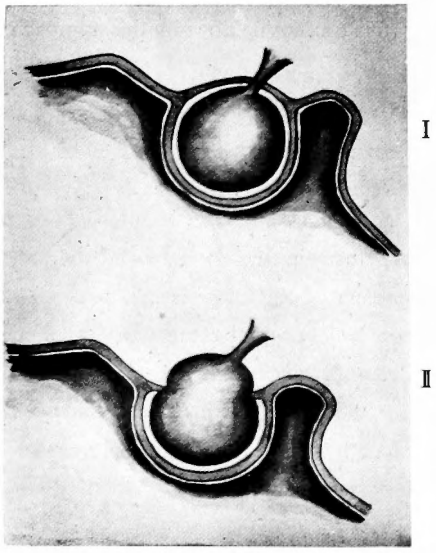

Fig. 28 Attachment of the sellar diaphragm to hypophysis. I: ordinary type, II: unusual suprasellar type.

8) **Is the total extracapsular removal of pituitary adenomas advisable?**

This is not advisable since;

i) Some important function of the adenomas may be probable, even though we are not able to demonstrate any hormonal effects due to them, and

ii) in such a procedure, injury to the neighboring structures (III, IV, VI nerves, cavernous sinus, carotid artery) is unavoidable (Fig. 29).

9) **Technique to remove a hypophyseal tumor.**

It is generally recommended to remove the intracapsular content piece by piece by means of a curette (Eig. 30 and 31), and after the tumor is thus reduced in size, to remove the capsule of the suprasellar portion as much as possible. When a tumor in the hypophyseal region is

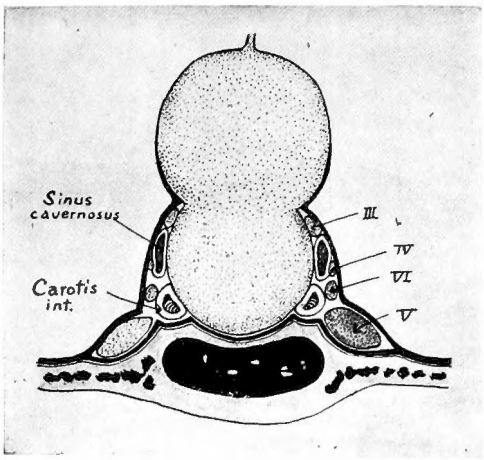

Fig. 29 Cross section of the sellar region to show the topography of neighboringb lood-vessels and cranial nerves.

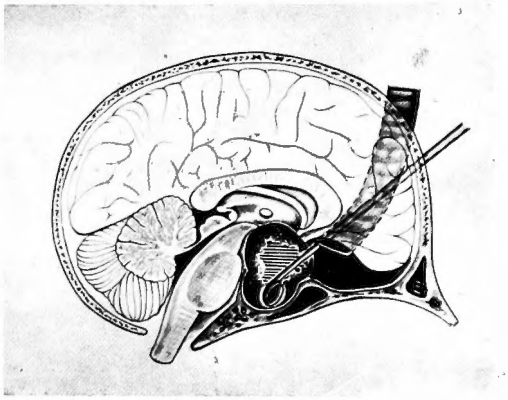

Fig. 30 Piecemeal intracapsular removal of pstuitary adenoma by means of a curette.

Fig. 31 Fragments of the adenoma removed by intracapsular curettage.

explored, we should be certain that the tumor is not a craniopharyngioma. The practical differentiation can be made by the character of the fluid obtained by puncture, since in adenomas, when cystic, the content is usually dark and chocolate colored, while in craniopharyngiomas it is clear and yellowish or greenish in color (Tab. 13).

10) **Technique to remove parasellar tumors.**

Tumors in the parasellar region is reached most easily by a combined fronto-temporal approach. The optic chiasm is first explored under the frontal lobe, and then the tip of the temporal lobe is pushed away from the sphenoidal ridge, enabling the parasellar region to come into full view (Fig. 32). If more room is necessary, a pole of the temporal lobe may be resected (Fig. 33).

	Cases	%
Brown or dark brown and turbid (chocolate-like)	6	9.4
Yellow, yellowish brown or yellowish green and clear	48	75.0
Clear (color not described)	10	15.6
Total	64	100.0

Table 13. Character of the contents of craniopharyngiomatous cysts, reported in the literature.

—— Motion picture demonstration of the operation for a parasellar tumor (about 1500 feet long) ——

11) **Effects of cardiotonics when injected into one of the lateral ventricles of the brain.**

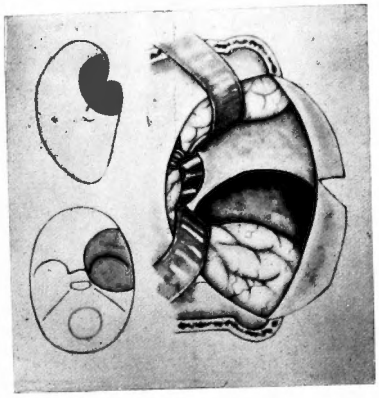

Fig. 32 Exploration of parasellar region by frontotemporal approach.

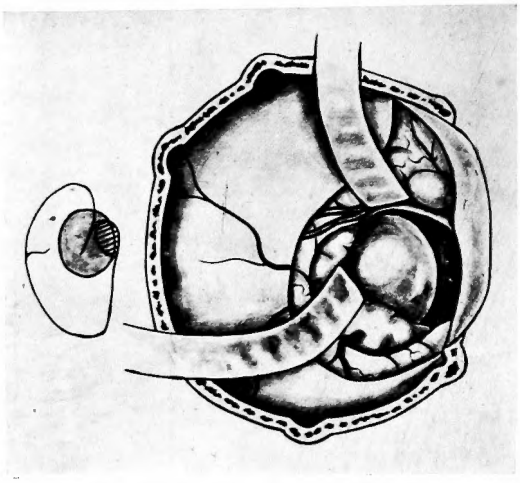

Fig. 33 Exploration of a parasellar tumor by resecting the temporal lobe.

As an emergency measure for unexpected cardiovascular disturbance during intracranial operations, I wish to recommend to give cardiotonics intraventricularly.

According to Sugino's study in man, coramin is the best for this purpose, as it causes, when given intraventricularly, a much more marked effect in raising the blood pressure and deepening the respiration than when given intravenously (Fig. 34 and 35).

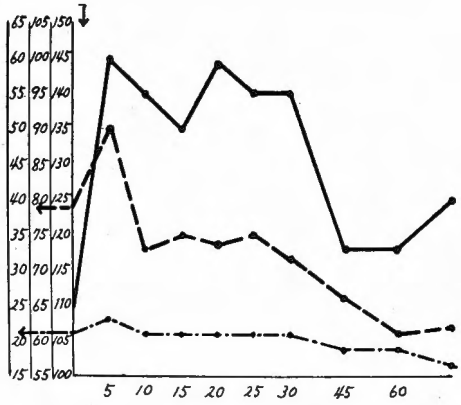

Fig. 34 Effect of Reformin (Coramin made in Japan) on the blood pressure (solid line), pulse rate (interrupted line) and respiration (dot-dash line), when administered intraventricularly (0.7 ccm).

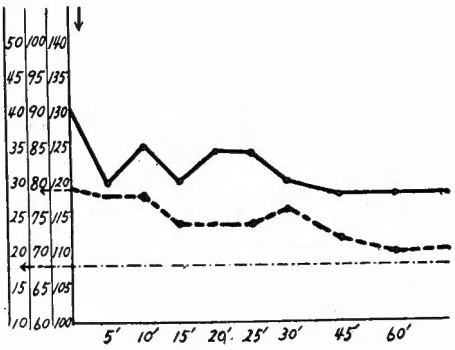

Fig. 35 Effect of Reformin when administered intravenously (1.0 ccm).

Other cardiotonics (vitacampher) are less effective, while some others (adrenaline), when given intraventricularly, tends to lower the blood pressure.

12) **Postoperative disturbances.**

Despite the earlier reports in this country, the cases are, in my experience, quite exceptiona,l

in which the patient succombs to postoperative convulsions due to cerebral edema.

The traumatic atrophy of the frontal lobe is also rare, as is shown by the infrequency of the dilated anterior horn in the postoperative pneumoencephalograms.

In one case of pituitary adenoma diabetes insipidus resulted, coming on immediately after the operation and disappearing completely after a week.

In another case, the temperature was 1°C higher on the homolateral half of the body for about 24 hours, without leaving any persistent disturbance.

In two cases of parasellar tumor a transient aphasia appeared as a result of the demage to the left temporal lobe.

13) Postoperative irradiation of pituitary adenomas.

To prevent recurrence, it is advisable to irradiate pituitary adenomas postoperatively. Recentiy it has been routine in our clinic to do this. However, this has not been followed long enough to permit any conclusion.

14) Operative results in pituitary tumors.

In my series of 14 pituitary tumors, 10 were adenomas and 4 were craniopharyngiomas. There were no deaths in the adenoma group, while 2 of the craniopharyngiomas died within several hours after the operation. In all of the surviving cases, visual disturbances more or less improved and headaches disappeared (Fig. 36).

15) Operative results in parasellar tumors.

There was one immediate operative death in 9 cases of parasellar tumor. In three recovery was complete, leading to normal living. The remaining 5 patients survived the operation, but the later results were not satisfactory, useful lives being never regained, that is, the tumor recurred rapidly, or increased intracranial pressure persisted, or hemiplegia was permanent, and so on.

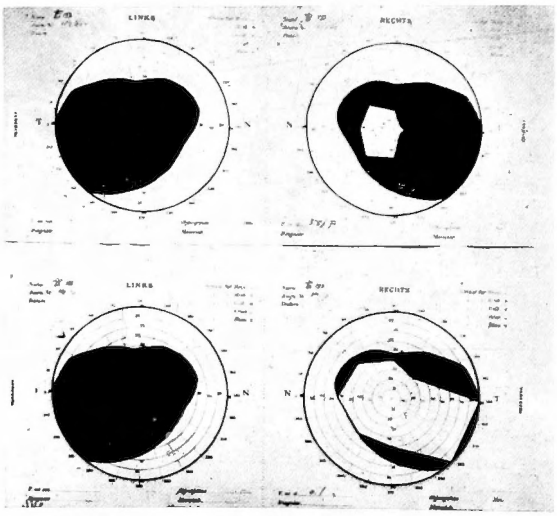

Fig. 36 postoperative enlargement of the visual fields in a case of chromophobe adenoma.

16) Operative results in arachnoiditis of the chiasmatic cistern.

10 cases were treated surgically. No mortality. In those cases where the optic atrophy was not advanced, visual acuity improved and visual fields enlarged as a result of the operation (Fig. 37).

17) Pineal tumor.

In one case a pinealoma of the size of a thumb was successfully removed by the transcal-

losal approach of Dandy (Fig. 38). Though the patient died of recurrence 8 months after operation, this is the first pineal tumor in this country, which was operatrd on without immediate death.

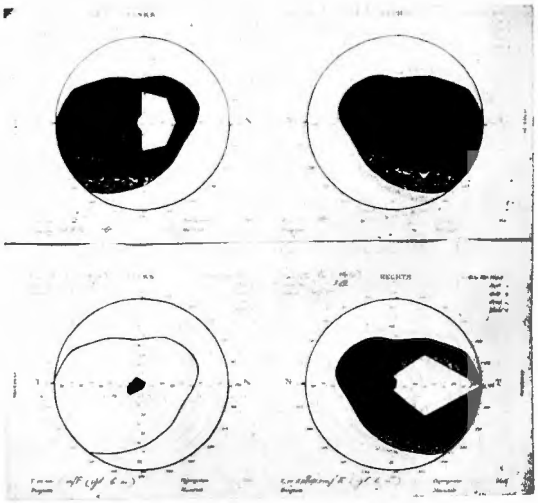

Fig. 37 Postoperative enlargement of the visual fields in a case of chronic arachnoiditis of the chiasmatic cistern.

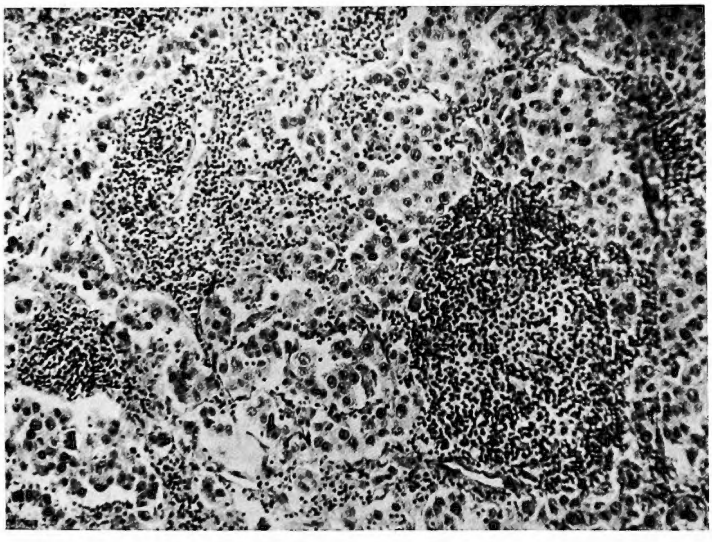

Fig. 38
Typical pinealoma. Hematoxylin and eosin stain.

邦 文 抄 錄

緒 言

1) 問題取扱ヒ範圍
腦下垂體，第3腦室，側頭葉底面ノ中心ニ近イ部分ヲ指ス。

2) 各種腦下垂體部腫瘍ノ外科的意義
腦下垂體自身ノ腫瘍ハ手術ノ豫後最モ可，鞍上，鞍外腫瘍ハ手術困難ナレド，尙手術ノ對象トシテノ餘地多シ。

3) 正常腦下垂體及ビ腦下垂體部腫瘍ノ組織學的事項

正常腦下垂體前葉ノ3種細胞ノ比率ハ日本人ニテハ chromophob 細胞 49.5 %, eosinophil 細胞 33.6 %, basophil 細胞 15.0 %ナリ(稻本晃)。

家兎正常腦下垂體前葉ノ體外組織培養ヲ行フニ，發育シ來ル細胞ハ殆ンド凡テ chromophob 細胞ナリ(松田孫一)。

人間ノ chromophob 腺腫ノ體外培養モ可能ナリ。

診斷ニ關スル事項

1) 內分泌學的症候

腦下垂體部腫瘍（「アクロメガリー」ヲ除ク）ニテハ定型的ナル Dystrophia adiposogenitalis 型ヲ呈スルモノハ案外少イ。

2) 隣接症狀

Ⅰ—Ⅵ腦神經麻痺，Horner 症候群，半身麻痺。

3) 視丘下部ヨリノ症狀

外科的ニハ血液循環，呼吸，體溫，睡眠乃至意識ニ對スル調節障碍ガ重要デアル。

4) 腦下垂體腫瘍患者ニ於ケル水分代謝(鬼川誠)

潛在性尿崩症ヲ呈スルモノハ少ク，主トシテ尿稀釋障碍ヲ呈スル例多シ。

5) 腦下垂體腫瘍ニ於ケル後葉機能(森欣一)

Oxytocin ノ腦脊髓液內減少ヲ認ムルモノ多キモ診斷的意義少シ。

6) 腦下垂體腫瘍ニ於ケル基礎代謝(山田憲吾)

單ナル基礎代謝測定ハ診斷的意義少キモ，Praehormon 靜脈內注射ニヨリ腦下垂體部疾患ニテハ基礎代謝低下ノ傾向ヲ示ス。

7) 腦下垂體腫瘍ニ於ケル血液像(金將星，辻井敏)

余等ノ腦下垂體腫瘍10例ニテハ白血球數減少，relative Lymphocytose ノ傾向ヲ示シタ。

8) 血糖調節ノ變化(松田昌二)

腦下垂體腫瘍(「アクロメガリー」ヲ除ク)ニテハ變化ヲ認メズ。後頭蓋窩腫瘍ニテ變化ヲ呈スルモノ多シ。

9) 腦下垂體腫瘍診斷上ニ於ケル鬱血乳頭ノ意義

高度ノ鬱血乳頭アリ，而モソノ際視野ニ半盲性缺損ナキ場合ニハ腦下垂體腫瘍ノ診斷ヲ下スニハ注意ヲ要ス。

レントゲン診斷

10) Sella ノ變化

注意事項及ビ頭蓋底面撮影(石野琢二郎)。

11) 腦動脈撮影法

清水健太郎博士ノ意見ニ贊ス。

12) 腦底 Cisterna 造影法

空氣及ビ沃度油ニヨル造影法ハ何レモ結果不充分デアル。

13) 沃度油腦室撮影法(淺野芳登)

コノ方法ニヨリ腦下垂體部ノ疾患ハ最モ確實ニ診斷シ得ル。

14) 腦下垂體部腫瘍ト誤リ易キ Cisterna chiasmatis 部ノ蜘蛛膜炎

視神經周圍ニ癒着肥厚アル例ノミニ限ラズ，廣キ意味ノ臨床的範疇トシテ提唱ス。

手術ニ關スル事項

1) 手術適應—眼症狀

2) 手術適應—頭痛

3) Chromophob 腺腫剔出ノ合理性(吉岡忠夫)

手術ニヨリテ得タル chromophob 腺腫ノ新鮮組織ヲ「ラツテ」ヘ移植シテ檢セルモ「ホルモン」效果ヲ認メズ。從ツテ手術ニヨリテ腦下垂體機能低下ヲ增惡セシムト考フベキ根據ナシ。

手術方法

4) Transsphenoidal 經路

腫瘍ノ鞍上部ヲ剔出スルコト困難。ヨツテ推奬シ難シ。

5) Transfrontal ト transtemporol ノ手術經路

Transtemporal ハ操作困難且ツ危險多シ。

6) 開頭ノ方法

Dandy 法ノ變法ヲ行フ。手術時腦脊髓液ヲ充分吸引排除シテ，腦ヲ萎縮セシメテ後，進入スレバ intradural ノ術式ニテ前頭葉挫滅ノ危險ナシ。

7) 外科的ニ見タル正常腦下垂體

大豆大前後ノ大サニテ鞍上部ニ凸出セル腦下垂體ハ腫瘍ト見做スベキモノニ非ズ。

8) 腦下垂體腺腫ハ被膜外ニ全剔出スベキ乎

行フベカラズ，又行フコトヲ得ズ。

9) 腦下垂體腫瘍剔出法

被膜內斷片的剔出ヲ行フ。chromophob 腺腫カ「クラニオフアリンギオーム」カハ手術時囊腫內容液ノ性狀ニヨリ區別シ得。

10) 鞍外腫瘍手術映畫供覽

11) 强心劑ノ腦室內應用(杉野良三)

「コラミン」類ヲ腦室內ニ注射スルコトニヨリ靜脈內注射ト比較ニナラヌ好結果ヲ收メ得。

12) 手術後障碍

前頭葉萎縮ヲ認メズ。術後全身痙攣ヲ起シテ死亡スルモノハ稀ナリ。尿崩症及ビ體溫左右不同，失語症ヲ來スコトアルモ何レモ一過性ナリ。

13) 手術後ノレントゲン治療(藤浪修一)

結果ヲ報告シ得ル時期ニ達セズ。

手術成績

14) 腦下垂體腫瘍ノ手術成績

14例中死亡2例，卽チ手術死亡率14%，1例ヲ除キ何レモ術後眼症狀輕快頭痛消失ス。

15) 鞍外腫瘍ノ手術成績

9例中直接手術ニヨリ死亡セルモノハ1例ナレド，後ノ成績ノ面白カラザルモノ多シ，併シ輕快著明ナルモノ3例アリ，今後ノ努力ヲ要ス。

16) Cisterna chiasmatis 部ノ蜘蛛膜炎

10例。成績一般ニ良好ナリ。死亡例ナシ。腫瘍ナキ腦下垂體部ノ手術ハ通常危險ヲ伴フコトナシ。

17) 松果腺腫瘍

手術セルハ1例ノミ。術後8ケ月ニテ再發ノ爲死亡セルモ，本邦ニ於テ兎ニ角剔出ニ成功セル第1例ナリ。